

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDÆ.—XVII.

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Abbotana clemataria Abb. & Smith. The mature larva has been figured by Abbot. Packard briefly describes this figure and Bruce has published a short note on the food plants.

Egg. Laid in a large mass of about 300, closely on a twig, all erect on the smaller end like *Clisiocampa*, but naked. Elliptical, flattened on two sides and a little concave, the larger end distinctly flattened truncate, side view slightly wedge-shaped. Reticulations very faint, not showing as lines, but as slight, roundly hexagonal flattenings, except just around the rim of the apical truncation where they form a row of slightly raised ridges composed of the raised sides of one series of cells, rather broad and diffuse, and at the micropyle where there are some small, rather distinct reticulations. Size $.7 \times .55 \times .45$ mm.

Stage I. Head broad, rounded, flattened before, mouth pointed; free, black, epistoma and labrum pale whitish; width .3 mm. Body slender, but not greatly elongated, flattened dorso-ventrally. Broadly black dorsally and ventrally leaving a white lateral stripe from joint 2 to the anal plate, which is pale with reddish central and lateral lines. Cervical shield dark like the dorsum, obscure. Anal feet reddish, those of joint 10 darker than 13. Setae dusky with small glandular tips, rather stout, arising from moderate tubercles, paler than the ground color but not contrasting, i and ii nearly in line, iii below ii, iv substigmal posterior, no subprimaries; four setae on the cervical shield, two detached. The white side stripe covers the leg plate of joint 13, not that of 10; claspers of feet pale. Segments finely, not very regularly annulate. Thoracic feet pale, darker shaded outwardly. On eating, the white parts became greenish and the dark ones turned pale vinous.

Stage II. Head rounded bilobed, clypeus moderate, sunken, lobes full; slaty black, epistoma and antennae white, mouth pale; width .6 mm. Body moderate, somewhat robust, smooth, scarcely annulate; entirely slaty black, only the claspers of abdominal feet pale yellowish. Tubercles small, dark, setae rather distinct, dusky, short. Skin not shining except slightly in the folds. Later shining olivaceous slaty black, no marks.

Stage III. Head rounded, full, slightly bilobed, apex free from joint 2, clypeus large, broad, moderately high; slaty black, labrum and labium white, slight white streakings on the sides above ocelli; width 1.2 mm. Body rather robust, not greatly elongated, wrinkly subannulate, especially posteriorly on the segments, smooth. the tubercles slightly elevated, especially on joint 12 posteriorly. Anal plate broadly triangular, rounded at the tip; anal prongs thick; anal feet projecting laterally. All brownish black not shining, no distinct marks; foot of joint 10 outwardly pale; venter a trace lighter than dorsum, obscurely longitudinally streaked. Tubercles iv and v obscurely white ringed; setae short, black. Thoracic feet black, equal, appressed. Later the color is bronzy black centrally, duller at the ends, the tubercles a little elevated and lumpy, especially a subdorsal prominence on joint 3 which forms a more or less distinct dorsal collar.

Stage IV. Head rounded, slightly bilobed flattened before, free from joint 2; lobes full; clypeus to vertex, the paraclypeal pieces obscure; slaty black, the lower part of clypeus mottled with pale and the sides of lobes streaked; labrum and epistoma whitish, dull; antennae short, brown; width 2.2 mm. Body cylindrical, rather thick, robust, uniform; joint 3 anteriorly dorsally strongly collared, with a double lateral finger shaped

process bearing tubercles iib and iv+v. A rounded process bearing tubercle ii of joint 8. Dorsal tubercles all slightly elevated; anal prongs short, projecting. Slaty black dorsally, a little bronzy, shading to sordid ochreous ventrally, mottled and streaked with black. Collar of joint 3 flesh colored before; processes orange spotted; orange dots on tubercles ii, iv and v and a larger one outside the finger process of joint 8. Foot of joint 10 brightly shaded outwardly. A black blotch on joint 8 subventrally. Thoracic and anal feet dark. Setae small except on the anal plate and with the hair tubercles black. The larva bends the head and joint 2 downward, forming an angle at joint 3, the feet of 4 crossing the others, making the anterior end look thick and club-shaped.

Stage 17. Head shaped as before, but the back of the occiput covered by joint 2; labrum quadrate, emarginate, epistoma broad, clypeus triangular; purplish gray, thickly mottled on a white ground, somewhat spirally over the faces of the lobes; eyes black; last joint of antennae long and reddish; width 3.2 mm. Body as before, a little intensified in the characters. Joints 2 and 3 anteriorly abruptly rising to a high collared elevation on joint 3, angled subdorsally by the double finger processes. Dorsum descending to joint 5, then cylindrical and smooth (except for the small, produced tubercles, tubercle ii most produced) to joint 12, but tubercle ii of joint 8 very large, forming a high, club-shaped papilla; tubercle ii of joint 12 also prominent, but to a less degree. Anal plate rounded behind, the leg shield not produced posteriorly, the prongs thick, moderate. Purplish brown like bark, densely mottled, shields paler, the outside of the foot of joint 10 especially so; collar black, an orange patch before it, mottled; finger processes tipped with red; tubercles i to v form bright orange cushions bearing the black hair tubercle; tubercles vi and vii black all a little elevated. Spiracles white, black rimmed. Setae short, black, distinct.

The half of the larva below the spiracles is lighter, more grayish than the dorsum; the base of the foot of joint 4 and venter of joint 8 are darkly shaded, also subdorsally on joint 12 and the papilla of joint 8. Later the ground color becomes alike all over, slightly ochreous gray, like bark, the marks the same, the dark patches more contrasted.

Spun among leaves on the ground. The eggs were found April 30th, on a chestnut twig, having apparently passed the winter in this state. The larvae began spinning about June 1st and the first moth appeared July 1st. The species therefore seems to be double brooded with hibernation in the egg state. The larvae were fed on oak till the developing leaves became too hard for their weak mandibles, after which they ate pear leaves. They seem to be general feeders for any leaves not too hard. Larvae from Washington, D. C.

SUPPLEMENTARY NOTES ON ORGYIA.

In PSYCHE vii, 340 (1896) I published some "final notes on Orgyia," giving a list of the American species of *Notolophus*. Since then some additional facts have come to light.

Notolophus oslari Barnes, Can. ent., xxxii, 45 (Feb., 1900); *libera* Strecker, Suppl. 3, Lep. Rhop. & Het., 29 (Mar., 1900).

This newly discovered form from the Rocky Mountain region is still unknown in the larva. It will prove of much interest, as the moth lies between *antiqua* and *vetusta*, two species hitherto not considered allied.

Notolophus inornata Beut., PSYCHE, v, 300 (1890).

I shall have to allow this form specific standing. Mr. Beutenmüller not long since collected additional material in Florida which shows a moth nearly allied to *definita* and possessing, like it, wool-covered eggs. He kindly directed me to the exact spot where his collections were made and I found there